CODE LETTERS FOR PROGRESS REPORT 99
CONTINUOUS EVALUATION OF CORRUGATING MEDIUM
PROJECT 1108-17

Company - Mill	Machine No.	Code Letter
The Chesapeake Corporation--West Point	1	--
Continental Can Company, Inc.--Hopewell	1	P
--Hodge	1	B
Crown Zellerbach Corporation--Baltimore	1	A
--Baltimore	2	M
--Bogalusa	4	E
--Lebanon	1	--
--Lebanon	2	N
International Paper Company--Bastrop	1	L
--Bastrop	2	S
--Georgetown	1	D
The Mead Corporation--Harriman	1	K
--Knoxville	1	--
--Lynchburg	2	F
--Sylva	1	--
Olin Mathieson Chemical Corporation--Monroe	1	--
--Monroe	2	--
Owens-Illinois Glass Company--Big Island	3	R
--Tomahawk	1	U
--Tomahawk	2	G
--Tomahawk	3	J
Packaging Corporation of America--Filer City	1	C
--Filer City	2	I
St. Joe Paper Company--Port St. Joe	1	T
St. Regis Container Corporation		
Mill Division--Coshocton	1	V
Union Bag-Camp Paper Corporation--Savannah	2	N
West Virginia Pulp and Paper Company--Covington	6	O
--Covington	7	--
--Charleston	--	--
Weyerhaeuser Company		
North Carolina Division--Plymouth	3	Q

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

Project 1108-17

Report 99

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

February 1, 1963

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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

INTRODUCTION

As requested by the Technical Committee of the Fourdrinier Kraft Board Institute, Inc., the reports pertinent to the continuous evaluation of corrugating medium are prepared by The Institute of Paper Chemistry on a bimonthly basis instead of the previous monthly basis. This system was initiated on August 1, 1961. This ninth report under the bimonthly system presents results obtained during the months of December, 1962, and January, 1963.

During this ninth bimonthly period, 140 rolls of corrugating medium representing the production of twenty-two machines were evaluated. A tabulation of the number of rolls and type of medium submitted from each machine during the months of December, 1962, and January, 1963, is given in Table I. In connection with the data given in Table I, it should be mentioned that, effective September 1, 1961, at the request of the Technical Committee, the limit on the number of rolls submitted for evaluation from each machine during a given month was reduced from six to four.

Each sample of corrugating medium was evaluated for basis weight, caliper, Concora flat crush (conditioned after fluting), H. and D. flat crush on single-faced board, and runnability. Runnability was measured by corrugating each roll under standardized conditions on the Institute's corrugator into A-flute board at 600 feet per minute with minimum tension. If unsatisfactory runnability occurred at this speed, the corrugator was slowed down in increments of 25 f.p.m. until satisfactory runnability was obtained—i.e., no ruptured flutes. If the medium fabricated satisfactorily at 600 f.p.m. with minimum tension, further runs were made at higher tensions to determine when cracking occurred. The higher tensions used were 0.5 lb. per inch, 1.0 lb. per inch, and 1.5 lb. per inch.

TABLE I

NUMBER OF ROLLS AND TYPE OF CORRUGATING MEDIUM SUBMITTED FOR EVALUATION FROM EACH MACHINE

December, 1962 and January, 1963

Machine Code	Number of Rolls	Type
A	4	Bogus
B	6	Semichemical
C	7	Semichemical
D	5	Semichemical
E	6	Semichemical
F	10	Semichemical
G	8	Semichemical
H	8	Semichemical
I	7	Semichemical
J	8	Semichemical
K	8	Semichemical
L	4	Semichemical
M	4	Bogus
N	10	Semichemical
O	2	Semichemical
P	6	Semichemical
Q	8	Semichemical
R	7	Semichemical
S	8	Semichemical
T	4	Kraft
U	8	Semichemical
V	2	Bogus
Total	140	

Flat crush was determined on the single-faced board obtained at a speed of 600 f.p.m. with minimum tension. The flat crush results, in addition to supplying information about quality, will provide data which may be useful in studying the relationship between Concora flat crush and combined board flat crush for each participant's medium.

For each participating machine, the current machine averages associated with the current period are shown for each test in Table II and presented graphically in Fig. 1 to 4. The current machine average is the average of the test results obtained on all rolls of corrugating medium evaluated from a given machine during the current period. In addition to the test data obtained for the various machines, Table II also presents the current F.K.I. averages, cumulative F.K.I. averages, and the F.K.I. indexes. The current F.K.I. average for each test is the average of the test results for all machines participating in the study during a given period. The cumulative F.K.I. average for each test is determined by averaging the results for the previous twelve-month period excluding the result for the current period. The F.K.I. index for each test is obtained as follows:

$$\frac{\text{current F.K.I. average}}{\text{cumulative F.K.I. average}} \times 100 = \text{F.K.I. index (\%)}$$

The F.K.I. index provides a ready means of comparing the current quality with previous results. An index greater than 100% indicates that current quality is higher than the average result for the previous twelve periods; an index below 100% indicates that current quality is lower than the average result for the previous twelve periods.

The test results obtained on the sample lots submitted from the production of individual machines during December, 1962, and January, 1963, are shown in Tables III through XXIV for Machines A through V, respectively. The maximum, minimum, and average test results obtained on each sample lot are shown for all

TABLE II

SUMMARY OF CURRENT MACHINE AVERAGES

December, 1962 and January, 1963

Mill Code	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
A	27.5	9.7	36.5	34.7
B	27.1	10.0	40.1	35.7
C	26.4	10.3	34.0	30.4
D	28.0	10.5	39.4	35.6
E	27.0	10.3	32.7	30.0
F	27.2	10.2	37.3	33.2
G	26.9	10.3	38.7	34.8
H	26.3	10.0	29.7	28.2
I	26.7	9.9	35.3	31.2
J	26.8	10.7	36.7	32.3
K	27.9	11.0	36.6	32.1
L	26.2	10.6	40.0	36.0
M	27.7	9.4	38.2	35.2
N	26.4	9.2	37.2	33.0
O	26.2	10.2	37.0	31.1
P	27.4	10.7	39.3	35.5
Q	27.0	10.1	37.3	34.0
R	26.7	10.2	37.1	33.5
S	26.9	10.6	38.5	35.8
T	27.9	9.8	36.6	34.6
U	26.7	10.4	37.1	34.1
V	27.8	10.6	37.3	33.8
Current F.K.I. Average	27.0	10.2	36.9	33.4
Cumulative F.K.I. Average	27.2	10.3	36.6	33.1
F.K.I. Index, %	99.5	99.5	100.8	100.8

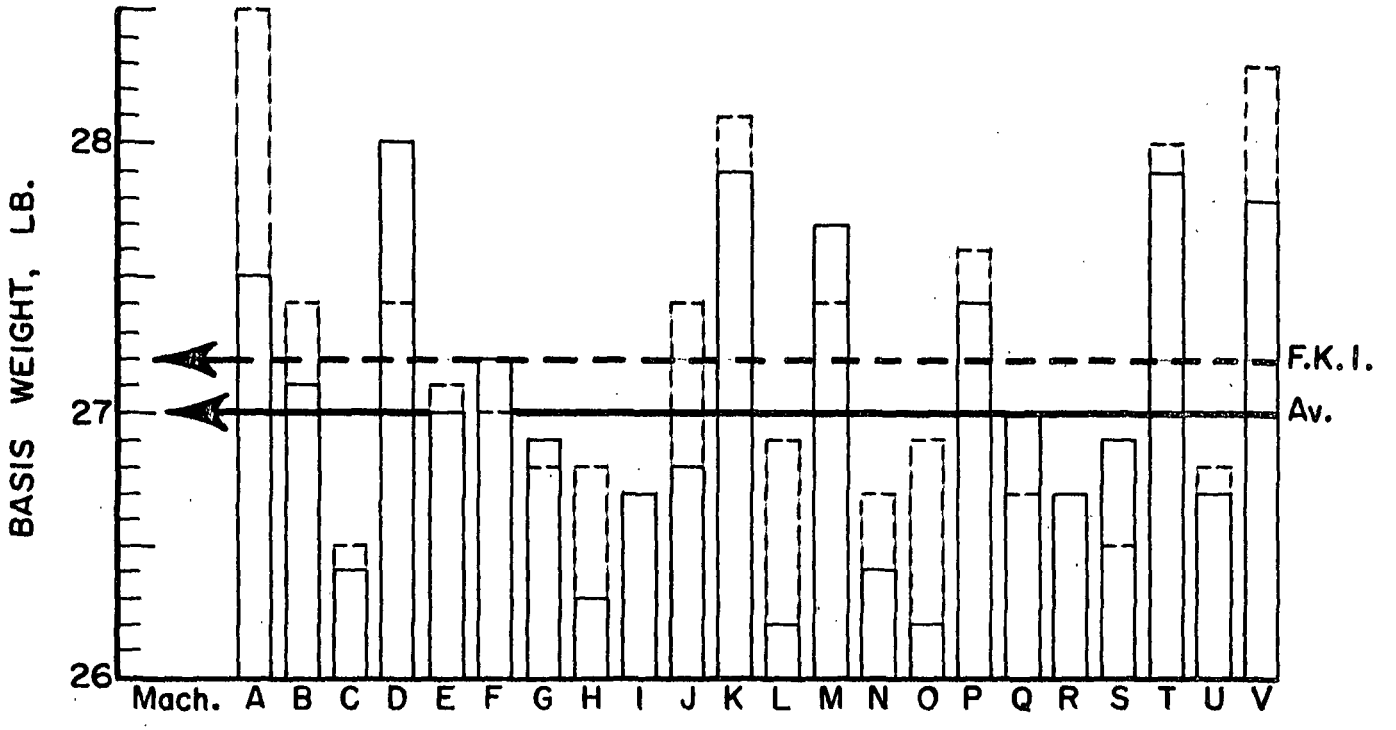

Figure 1. Comparison of Basis Weight Results

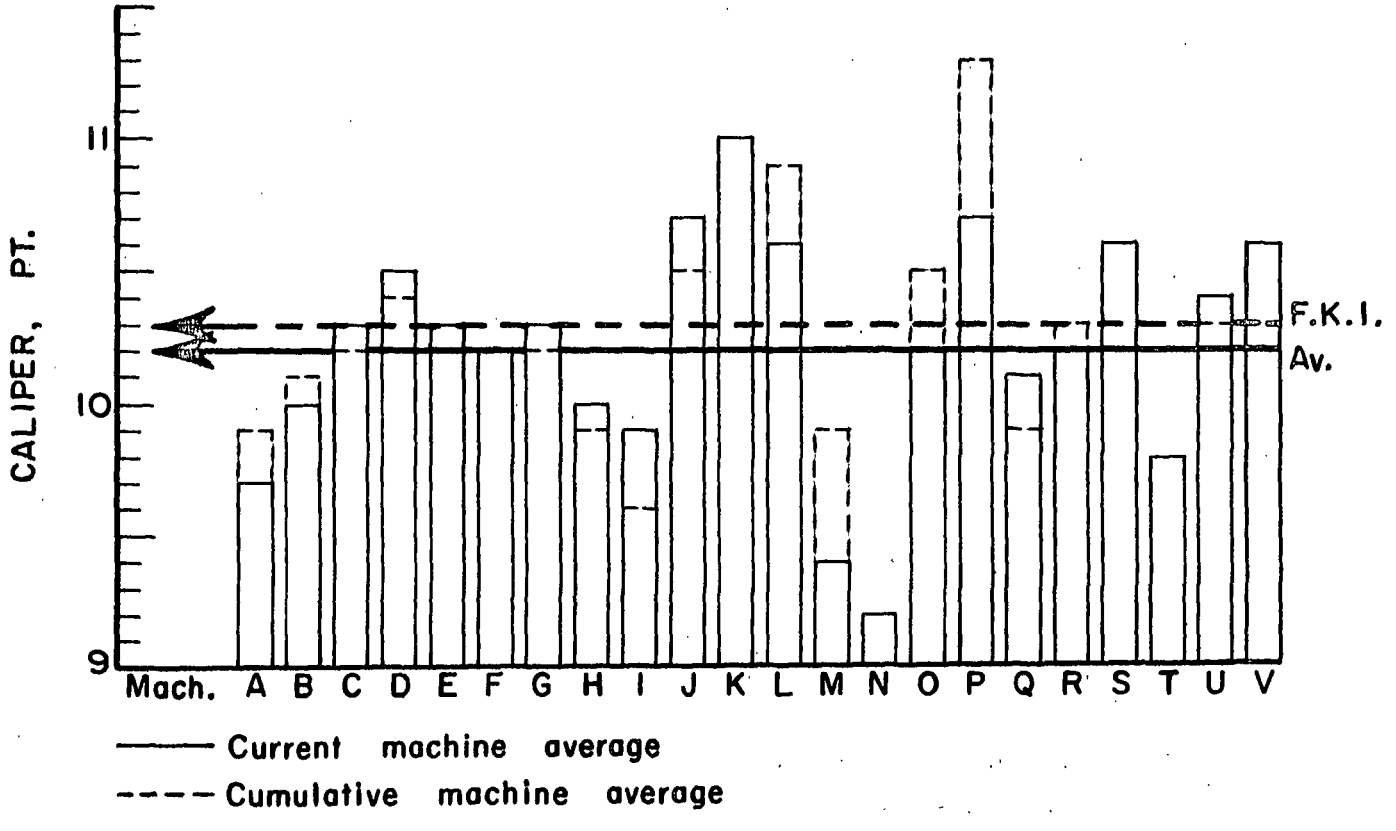

Figure 2. Comparison of Caliper Results

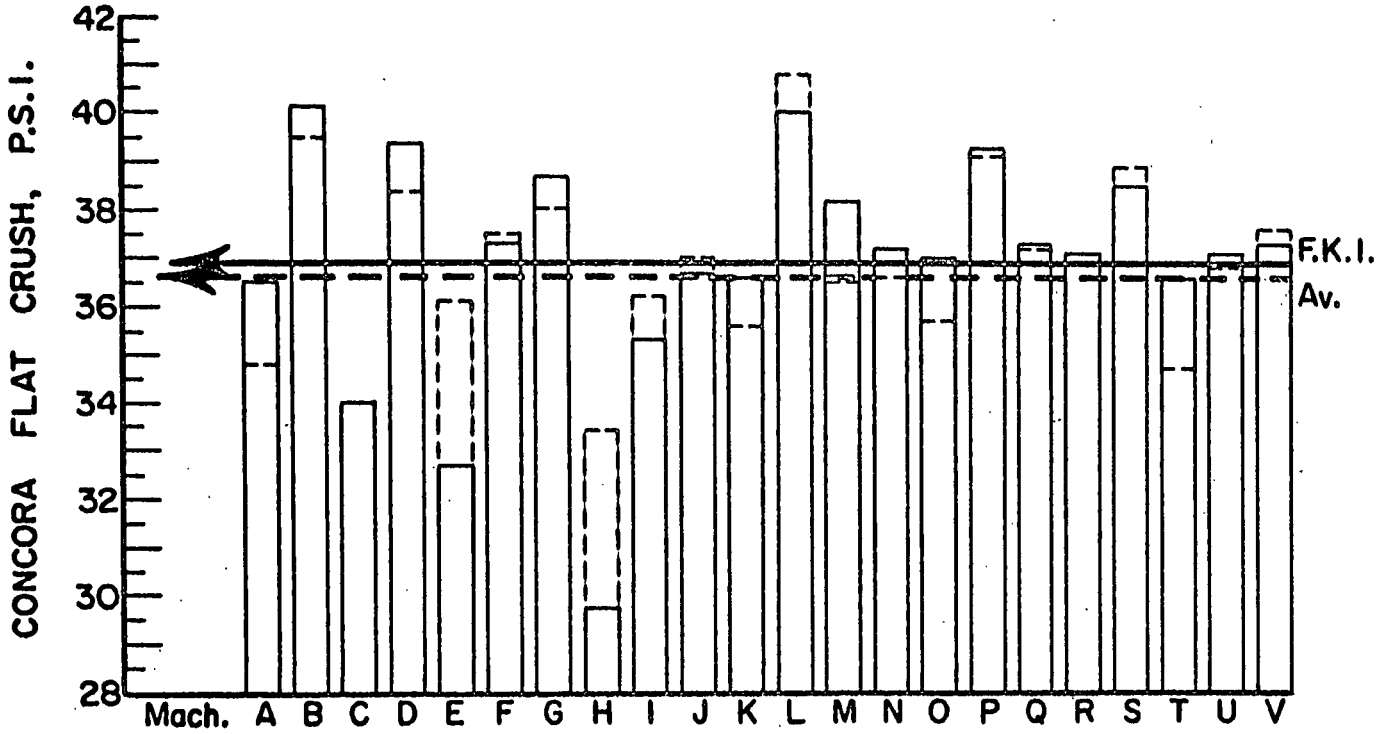

Figure 3. Comparison of Concora Flat Crush Results

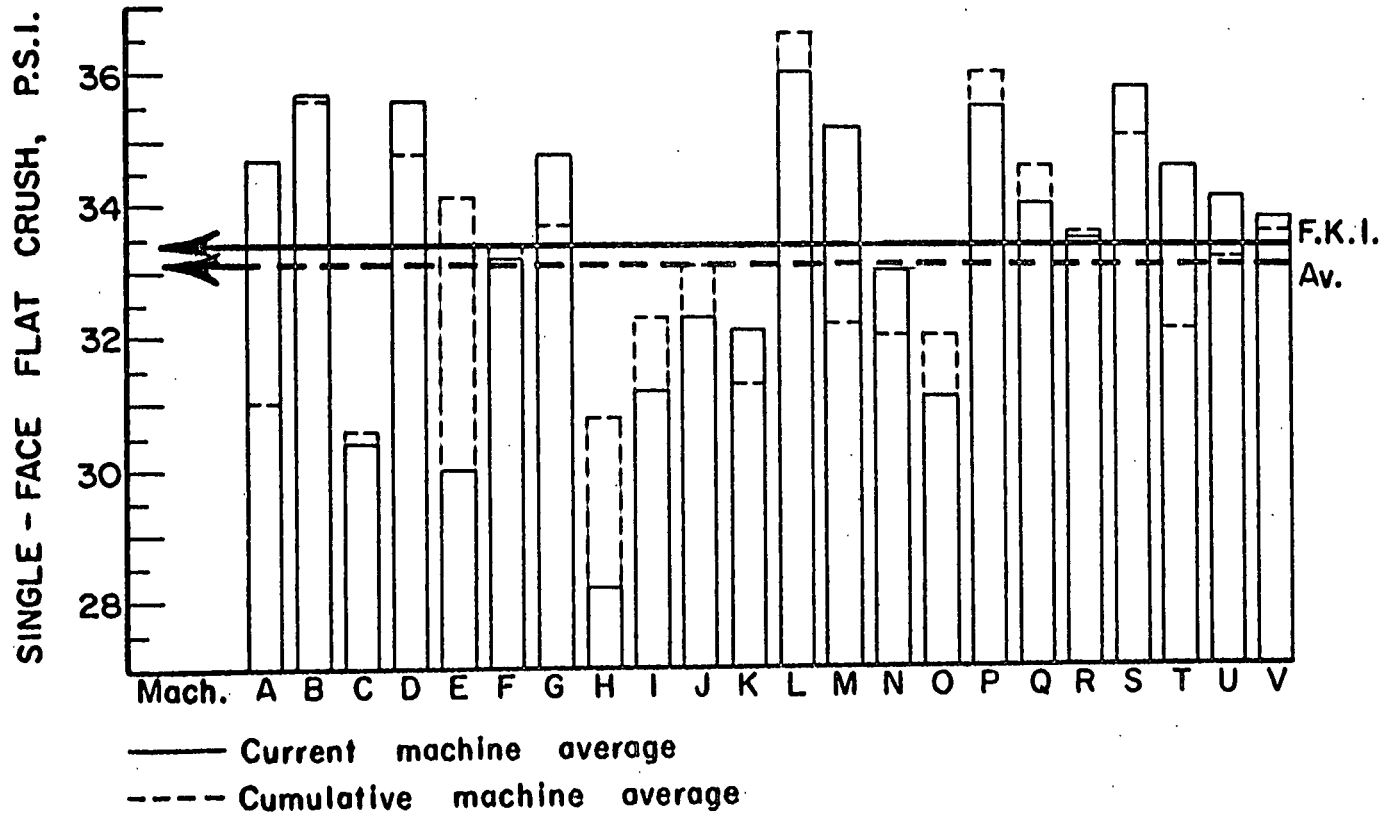

Figure 4. Comparison of Single-Face Flat Crush Results

TABLE III

SUMMARY OF TEST RESULTS FOR MACHINE A

December, 1962 and January, 1963
(Type of Medium: Bogus)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
A-1	11-12-62	11-26-62	152	27.3	10.3	9.1	9.9	37.8	31.2	35.2	35.2	32.2	34.0	1-1/2
A-2	11-12-62	11-26-62	153	27.1	10.2	9.4	10.0	38.4	34.2	35.8	37.0	33.0	35.0	1-1/2
A-3	12- 7-62	1- 2-63	154	28.4	10.1	9.8	9.9	39.6	34.2	37.1	37.6	35.4	36.6	1-1/2
A-4	12- 7-62	1- 2-63	155	27.4	9.4	8.8	9.1	40.2	35.4	38.0	35.0	32.4	33.3	1-1/2
Current Machine Average				27.5			9.7			36.5			34.7	
Cumulative Machine Average				28.5			9.9			34.8			31.0	
Machine Factor, %				96.7			98.4			105.0			111.9	
Machine Index, %				101.4			94.8			99.6			104.8	

TABLE IV

SUMMARY OF TEST RESULTS FOR MACHINE B

December, 1962 and January, 1963
(Type of Medium: Semichemical)

B-1	11- 4-62	11-30-62	63	28.1	10.8	10.1	10.3	43.2	41.4	42.1	39.2	37.0	38.2	1-1/2
B-2	--	11-30-62	64	27.1	10.2	9.9	10.0	41.4	37.8	39.6	36.4	33.0	35.3	1-1/2
B-3	--	12-17-62	66	26.3	9.9	9.7	9.8	42.0	39.0	40.2	37.4	34.8	36.0	1-1/2
B-4	--	12-17-62	67	26.3	10.3	9.8	10.0	43.8	37.8	40.8	37.6	33.8	35.5	1-1/2
B-5	12-12-62	12-28-62	69	27.6	10.2	9.7	10.1	43.8	40.8	42.2	37.0	33.8	35.0	1-1/2
B-6	12-17-62	12-28-62	70	27.4	10.0	9.8	9.9	37.2	33.6	35.9	34.8	33.4	34.2	1-1/2
Current Machine Average				27.1			10.0			40.1			35.7	
Cumulative Machine Average				27.4			10.1			39.5			35.6	
Machine Factor, %				99.1			99.7			101.7			100.2	
Machine Index, %				99.8			97.8			109.5			107.8	

TABLE V

SUMMARY OF TEST RESULTS FOR MACHINE C

December, 1962 and January, 1963
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M sq.ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
C-1	11-28-62	12- 4-62	44	27.0	10.8	9.7	10.1	35.4	32.4	34.4	30.4	28.0	29.1	1-1/2
C-2	12- 1-62	12- 6-62	45	26.8	11.0	10.0	10.4	35.4	32.4	33.6	32.0	30.2	31.2	1-1/2
C-3	12- 9-62	12-17-62	46	26.9	10.5	9.9	10.1	35.4	33.0	34.3	32.4	30.8	31.8	1-1/2
C-4	12-16-62	12-20-62	47	26.0	10.6	10.1	10.3	34.8	30.6	33.1	31.8	30.2	31.0	1
C-5	12-20-62	1- 2-63	48	26.7	11.2	10.3	10.8	36.0	33.0	34.8	32.6	30.2	31.7	1-1/2
C-6	1- 9-63	1-14-63	49	25.4	10.7	10.1	10.3	35.4	30.6	33.1	30.8	28.0	29.0	1-1/2
C-7	1-12-63	1-18-63	50	26.3	10.8	10.0	10.4	37.2	32.4	34.3	30.6	28.0	29.0	1-1/2
Current Machine Average				26.4			10.3			34.0			30.4	
Cumulative Machine Average				26.5			10.2			34.0			30.6	
Machine Factor, %				99.9			100.8			100.0			99.5	
Machine Index, %				97.3			100.0			92.7			91.8	

TABLE VI

SUMMARY OF TEST RESULTS FOR MACHINE D

December, 1962 and January, 1963
(Type of Medium: Semichemical)

D-1	11- 8-62	12- 6-62	515	27.9	10.8	10.1	10.4	37.2	34.8	36.2	35.8	34.0	35.1	1-1/2
D-2	11-12-62	12- 6-62	516	27.4	10.8	10.2	10.4	43.2	36.0	39.8	38.0	34.6	36.3	1-1/2
D-3	11-27-62	12-17-62	517	28.9	10.9	10.2	10.6	42.0	39.6	40.4	38.2	34.8	35.7	1
D-4	12- 6-62	12-28-62	518	28.0	10.3	10.0	10.1	45.6	39.6	42.2	40.4	36.8	38.2	1-1/2
D-5	12-13-62	12-28-62	519	28.0	11.0	10.2	10.7	42.6	34.8	38.4	34.4	30.6	32.8	1
Current Machine Average				28.0			10.5			39.4			35.6	
Cumulative Machine Average				27.4			10.4			38.4			34.8	
Machine Factor, %				102.2			100.4			102.8			102.4	
Machine Index, %				103.1			101.8			107.6			107.6	

TABLE VII

SUMMARY OF TEST RESULTS FOR MACHINE E

December, 1962 and January, 1963
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M sq.ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
E-1	11-20-62	11-27-62	16	25.9	9.2	8.8	9.0	32.4	30.0	31.3	30.2	28.0	28.7	1-1/2
E-2	11-26-62	11-30-62	17	26.7	10.8	10.1	10.4	31.8	27.0	29.0	28.4	26.2	27.1	1/2
E-3	12- 6-62	12-11-62	18	27.0	10.2	9.4	9.9	32.4	30.0	31.6	31.2	28.2	29.7	1-1/2
E-4	12-12-62	12-17-62	19	28.0	11.8	10.8	11.1	37.2	34.2	35.5	35.0	32.6	33.7	1-1/2
E-5	1- 2-63	1-11-63	1	26.9	11.2	10.3	10.7	37.2	33.0	35.8	31.8	29.8	30.3	1-1/2
E-6	1-15-63	1-22-63	2	27.6	10.8	10.0	10.5	35.4	31.2	33.0	31.6	29.6	30.3	1
Current Machine Average				27.0			10.3			32.7			30.0	
Cumulative Machine Average				27.1			10.3			36.1			34.1	
Machine Factor, %				99.8			100.0			90.7			87.9	
Machine Index, %				99.4			100.0			89.2			90.5	

TABLE VIII

SUMMARY OF TEST RESULTS FOR MACHINE F

December, 1962 and January, 1963
(Type of Medium: Semichemical)

F-1	11-17-62	11-27-62	829	26.8	10.1	8.9	9.5	42.6	35.4	38.6	38.0	34.4	36.2	1-1/2
F-2	11-17-62	11-27-62	830	26.3	10.0	9.0	9.7	37.8	33.0	35.3	34.0	30.8	32.6	1-1/2
F-3	11-29-62	12- 7-62	837	27.9	11.4	10.8	11.1	47.4	39.6	41.6	39.4	35.6	37.2	1-1/2
F-4	11-29-62	12- 7-62	838	28.0	11.4	10.4	11.0	44.4	37.8	41.5	38.0	32.2	36.0	1-1/2
F-5	12-14-62	12-21-62	845	25.9	10.2	9.2	9.8	33.6	28.8	31.1	32.0	27.4	29.6	1-1/2
F-6	12-14-62	12-21-62	846	26.2	10.2	9.7	10.0	35.4	30.0	33.0	33.0	28.8	30.3	1-1/2
F-7	12-27-62	1- 2-63	853	27.0	10.6	10.0	10.2	39.6	31.8	35.2	30.4	28.4	29.5	1-1/2
F-8	12-27-62	1- 2-63	854	26.7	10.5	10.0	10.2	37.2	33.0	35.0	30.4	28.8	29.4	1-1/2
F-9	1-11-63	1-22-63	861	29.0	10.3	9.0	9.9	44.4	38.4	40.6	39.8	35.4	37.2	1-1/2
F-10	1-11-63	1-22-63	862	28.4	10.7	10.2	10.4	43.8	37.8	40.7	35.6	32.8	33.8	1-1/2
Current Machine Average				27.2			10.2			37.3			33.2	
Cumulative Machine Average				27.0			10.2			37.5			33.4	
Machine Factor, %				100.9			100.0			99.4			99.5	
Machine Index, %				100.0			99.0			101.7			100.2	

TABLE IX

SUMMARY OF TEST RESULTS FOR MACHINE G

December, 1962 and January, 1963
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M sq.ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
G-1	12- 6-62	12-18-62	--	26.5	10.8	10.0	10.4	39.0	33.6	36.7	34.2	32.0	33.1	1/2
G-2	12- 7-62	12-18-62	--	26.5	10.2	9.4	9.8	37.8	36.0	36.6	36.2	34.6	35.4	1
G-3	12-11-62	12-18-62	--	26.6	11.2	10.7	10.9	36.0	33.6	35.0	33.2	31.0	32.2	1/2
G-4	12-12-62	12-18-62	--	27.0	11.0	10.2	10.5	40.8	36.6	38.5	34.6	31.6	33.0	1/2
G-5	1- 6-63	1-21-63	--	26.7	10.2	9.9	10.1	43.2	38.4	40.6	36.4	35.8	36.0	1-1/2
G-6	1- 8-63	1-21-63	--	27.1	10.8	10.0	10.5	42.6	37.8	39.7	34.0	32.0	33.3	1-1/2
G-7	1-10-63	1-21-63	--	27.1	10.7	9.8	10.2	42.0	37.8	40.0	38.6	35.8	37.1	1-1/2
G-8	1-11-63	1-21-63	--	27.5	10.2	9.7	10.0	45.6	40.2	42.7	40.0	37.2	38.6	1-1/2
Current Machine Average				26.9			10.3			38.7			34.8	
Cumulative Machine Average				26.8			10.2			38.0			33.7	
Machine Factor, %				100.4			100.6			101.8			103.5	
Machine Index, %				98.9			100.0			105.7			105.2	

TABLE X

SUMMARY OF TEST RESULTS FOR MACHINE H

December, 1962 and January, 1963
(Type of Medium: Semichemical)

H-1	12-26-62	1- 8-63	L-7	25.8	10.8	9.3	10.0	33.6	28.2	31.2	28.8	27.0	28.0	1-1/2
H-2	12-26-62	1- 8-63	L-8	26.6	11.0	9.8	10.3	33.0	28.8	30.8	30.0	28.6	29.3	1-1/2
H-3	12-26-62	1- 8-63	L-16	26.7	10.2	9.6	9.9	32.4	27.6	29.6	28.4	27.2	28.0	1-1/2
H-4	12-26-62	1- 8-63	L-18	27.3	11.0	9.4	10.2	32.4	27.0	29.4	32.8	29.0	31.0	1-1/2
H-5	1- 4-63	1-23-63	A-1	25.5	10.8	8.8	9.8	30.6	27.6	29.3	28.2	25.6	27.0	1
H-6	1- 4-63	1-23-63	A-2	25.6	10.7	9.0	9.5	31.8	28.2	29.5	28.4	25.6	27.1	Min.
H-7	1- 4-63	1-23-63	A-3	26.1	11.0	9.8	10.4	34.2	27.0	29.5	27.8	26.8	27.3	Min.
H-8	1- 4-63	1-23-63	A-4	26.8	11.2	9.0	10.0	31.8	26.4	28.6	30.0	25.6	27.7	Min.
Current Machine Average				26.3			10.0			29.7			28.2	
Cumulative Machine Average				26.8			9.9			33.4			30.8	
Machine Factor, %				98.3			101.5			89.1			91.6	
Machine Index, %				96.8			97.6			81.2			85.1	

TABLE XI

SUMMARY OF TEST RESULTS FOR MACHINE I

December, 1962 and January, 1963
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M sq.ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
I-1	11-28-62	12- 4-62	44	27.1	10.2	9.2	9.9	39.0	37.2	37.7	32.4	30.6	31.5	1-1/2
I-2	12- 1-62	12- 6-62	45	26.5	9.8	9.0	9.2	37.8	33.6	36.1	34.6	31.2	32.6	1-1/2
I-3	12- 9-62	12-17-62	46	26.9	9.8	9.0	9.2	38.4	32.4	35.6	34.8	32.4	33.7	1-1/2
I-4	12-16-62	12-20-62	47	26.9	11.0	9.9	10.3	39.6	30.6	34.2	34.8	29.6	31.6	1
I-5	12-20-62	1- 2-63	48	26.7	11.0	9.7	10.3	39.0	34.8	36.6	32.2	30.0	31.2	1-1/2
I-6	1- 9-63	1-14-63	49	26.3	10.8	10.0	10.2	34.2	30.6	31.9	28.6	27.0	27.7	1-1/2
I-7	1-12-63	1-18-63	50	26.6	10.2	9.8	10.0	37.2	34.8	35.3	31.4	29.6	30.2	1-1/2
Current Machine Average				26.7			9.9			35.3			31.2	
Cumulative Machine Average				26.7			9.6			36.2			32.3	
Machine Factor, %				100.0			102.4			97.5			96.5	
Machine Index, %				98.3			96.2			96.5			94.3	

TABLE XII

SUMMARY OF TEST RESULTS FOR MACHINE J

December, 1962 and January, 1963
(Type of Medium: Semichemical)

J-1	12- 6-62	12-18-62	--	26.6	11.0	10.5	10.7	39.6	33.0	37.2	33.2	31.4	32.5	1-1/2
J-2	12- 7-62	12-18-62	--	26.8	11.7	10.3	10.9	35.4	32.4	34.3	31.2	29.4	30.3	1-1/2
J-3	12-10-62	12-18-62	--	26.7	10.9	10.2	10.6	39.6	36.0	37.8	36.8	33.4	34.5	1
J-4	12-11-62	12-18-62	--	26.6	11.0	10.2	10.7	36.6	33.0	34.4	32.2	31.0	31.6	1
J-5	1- 6-63	1-21-63	--	26.8	11.0	10.1	10.7	40.2	36.0	37.8	33.6	30.8	32.2	1/2
J-6	1- 7-63	1-21-63	--	26.8	11.0	10.2	10.6	42.0	32.4	38.3	34.8	33.6	34.1	1-1/2
J-7	1- 8-63	1-21-63	--	26.8	11.0	10.2	10.8	37.8	33.0	34.9	33.6	30.8	32.1	1
J-8	1-10-63	1-21-63	--	26.9	11.0	10.3	10.7	40.8	36.0	38.8	32.2	29.8	31.2	1-1/2
Current Machine Average				26.8			10.7			36.7			32.3	
Cumulative Machine Average				27.4			10.5			37.0			33.1	
Machine Factor, %				97.6			102.4			99.3			97.5	
Machine Index, %				98.5			104.3			100.1			97.6	

TABLE XIII

SUMMARY OF TEST RESULTS FOR MACHINE K

December, 1962 and January, 1963
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M sq.ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
K-1	11-20-62	12- 3-62	834	28.4	11.6	11.0	11.2	37.2	34.8	36.1	33.4	31.0	32.0	1-1/2
K-2	11-20-62	12- 3-62	835	29.0	11.2	10.4	10.8	37.2	34.2	35.8	33.2	29.6	31.9	1-1/2
K-3	12- 8-62	12-20-62	842	28.6	11.2	10.8	11.0	42.6	36.6	39.8	36.4	33.6	34.6	1-1/2
K-4	12- 8-62	12-20-62	843	28.3	11.0	10.5	10.9	42.6	37.2	39.7	35.0	32.4	33.8	1
K-5	1- 4-63	1-11-63	850	27.1	11.4	10.6	11.0	37.8	31.8	35.2	31.0	29.4	30.2	1/2
K-6	1- 4-63	1-11-63	851	27.1	11.2	10.3	10.9	36.6	33.6	35.5	32.6	30.6	31.7	1
K-7	1- 4-63	1-11-63	859	27.3	11.1	10.3	10.9	37.8	33.6	35.5	31.8	31.2	31.5	1
K-8	1- 4-63	1-11-63	860	27.3	11.1	10.8	10.9	37.2	33.0	35.2	31.6	30.4	30.9	1
Current Machine Average				27.9			11.0			36.6			32.1	
Cumulative Machine Average				28.1			11.0			35.6			31.3	
Machine Factor, %				99.3			100.0			102.7			102.6	
Machine Index, %				102.7			106.7			100.0			96.8	

TABLE XIV

SUMMARY OF TEST RESULTS FOR MACHINE L

December, 1962 and January, 1963
(Type of Medium: Semichemical)

L-1	11-23-62	11-30-62	680	25.7	11.9	9.2	10.7	40.2	34.2	36.1	35.6	33.2	34.6	1-1/2
L-2	11-27-62	12- 3-62	681	26.6	12.0	10.2	10.8	43.2	40.8	41.9	36.8	33.8	35.7	1-1/2
L-3	12-20-62	12-27-62	682	26.1	11.2	10.0	10.5	44.4	37.8	41.3	37.0	34.4	35.7	1-1/2
L-4	1-10-63	1-16-63	683	26.5	11.1	10.0	10.4	42.0	39.6	40.8	38.8	36.4	37.8	1-1/2
Current Machine Average				26.2			10.6			40.0			36.0	
Cumulative Machine Average				26.9			10.9			40.8			36.6	
Machine Factor, %				97.6			97.1			98.2			98.3	
Machine Index, %				96.5			103.1			109.2			108.6	

TABLE XV

SUMMARY OF TEST RESULTS FOR MACHINE M

December, 1962 and January, 1963
(Type of Medium: Bogus)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M sq.ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
M-1	11-15-62	11-26-62	155	27.5	10.0	8.9	9.4	37.8	34.2	36.1	35.0	33.0	34.0	1-1/2
M-2	11-15-62	11-26-62	156	28.4	10.3	9.1	9.8	39.6	37.8	38.6	36.0	32.8	34.1	1-1/2
M-3	12- 7-62	1- 2-63	157	27.4	9.3	9.0	9.1	40.8	37.2	38.9	39.4	36.4	37.8	1-1/2
M-4	12- 7-62	1- 2-63	158	27.4	9.6	8.9	9.2	40.8	37.8	39.1	37.4	33.0	34.8	1/2
Current Machine Average				27.7			9.4			38.2			35.2	
Cumulative Machine Average				27.4			9.9			36.5			32.2	
Machine Factor, %				101.0			94.8			104.6			109.1	
Machine Index, %				101.9			91.2			104.2			106.2	

TABLE XVI

SUMMARY OF TEST RESULTS FOR MACHINE N

December, 1962 and January, 1963
(Type of Medium: Semichemical)

N-1	11-15-62	11-26-62	519	26.3	9.2	8.8	9.0	36.6	34.2	35.4	32.0	29.8	30.7	--[a]
N-2	11-19-62	11-26-62	520	27.1	9.2	8.9	9.0	42.0	36.0	38.6	35.2	33.4	34.5	1-1/2
N-3	12- 5-62	12-17-62	521	26.3	9.5	8.8	9.2	36.0	34.8	35.5	32.6	30.4	31.6	1-1/2
N-4	12-11-62	12-19-62	522	26.2	9.3	8.5	9.0	40.2	34.8	38.0	33.6	32.0	32.8	1-1/2
N-5	12-13-62	12-26-62	523	26.3	9.5	8.9	9.2	37.8	31.2	35.2	34.8	32.0	33.1	1-1/2
N-6	12-18-62	12-26-62	524	25.3	9.0	8.5	8.8	38.4	33.6	35.8	33.0	30.4	31.7	1/2
N-7	12-20-62	1- 8-63	525	26.0	9.4	8.7	9.0	38.4	36.0	37.3	37.0	33.8	35.6	1
N-8	12-20-62	1-11-63	526	26.6	9.2	8.9	9.0	39.6	37.2	38.0	34.4	31.6	32.7	1-1/2
N-9	12-22-62	1-11-63	527	26.6	9.1	8.8	8.9	40.8	37.8	39.4	34.8	32.0	33.3	1-1/2
N-10	1-15-63	1-25-63	528	28.0	11.7	11.0	11.3	41.4	37.2	38.8	34.8	33.0	33.7	1-1/2
Current Machine Average				26.4			9.2			37.2			33.0	
Cumulative Machine Average				26.7			9.2			36.6			32.0	
Machine Factor, %				98.9			100.0			101.6			102.9	
Machine Index, %				97.3			90.1			101.5			99.6	

[a] Maximum speed at which this roll could be corrugated with minimum tension was 575 f.p.m.

TABLE XVII

SUMMARY OF TEST RESULTS FOR MACHINE O

December, 1962 and January, 1963
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M sq.ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
O-1	12- 3-62	12-17-62	223	26.4	10.7	10.1	10.3	38.4	34.8	36.5	32.0	29.6	31.1	1-1/2
O-2	12-10-62	1-18-62	224	26.0	10.4	9.9	10.1	41.4	34.2	37.6	35.0	29.8	31.1	Min.
Current Machine Average				26.2			10.2			37.0			31.1	
Cumulative Machine Average				26.9			10.5			35.7			32.0	
Machine Factor, %				97.3			97.6			103.7			97.2	
Machine Index, %				96.4			99.5			101.0			94.0	

TABLE XVIII

SUMMARY OF TEST RESULTS FOR MACHINE P

December, 1962 and January, 1963
(Type of Medium: Semichemical)

P-1	11-19-62	12-10-62	386	26.7	11.0	10.3	10.7	41.4	37.8	38.6	36.2	33.6	35.1	1-1/2
P-2	11-27-62	12-10-62	387	27.1	11.0	10.4	10.8	38.4	37.2	37.8	36.4	34.4	35.6	1-1/2
P-3	12- 3-62	12-26-62	388	28.0	11.2	11.0	11.1	42.0	37.8	39.5	36.8	33.4	35.2	1-1/2
P-4	12-11-62	12-26-62	389	27.9	11.8	11.2	11.5	42.0	38.4	40.2	36.2	35.0	35.6	1/2
P-5	12-17-62	12-26-62	390	27.8	11.8	11.0	11.3	42.0	38.4	39.8	35.8	34.2	35.2	1-1/2
P-6	1- 4-63	1-24-63	391	26.8	9.2	8.5	8.9	40.8	37.2	39.7	37.0	34.6	36.1	1/2
Current Machine Average				27.4			10.7			39.3			35.5	
Cumulative Machine Average				27.6			11.3			39.1			36.0	
Machine Factor, %				99.1			95.2			100.4			98.7	
Machine Index, %				100.8			104.6			107.2			107.1	

TABLE XIX

SUMMARY OF TEST RESULTS FOR MACHINE Q

December, 1962 and January, 1963
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M sq.ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
Q-1	11-12-62	11-29-62	352	26.3	10.8	9.8	10.2	40.8	35.4	38.0	35.0	31.8	33.6	1-1/2
Q-2	11-19-62	12-11-62	557	28.9	10.0	9.8	9.9	40.8	36.0	38.0	36.2	30.8	33.5	1
Q-3	11-23-62	12-11-62	680	27.4	10.8	10.0	10.4	39.0	34.8	36.4	36.2	34.4	35.2	--[a]
Q-4	11-27-62	12-11-62	826	26.6	10.2	9.3	10.0	38.4	33.0	36.1	35.2	32.6	33.8	1/2
Q-5	12- 5-62	12-20-62	130	27.4	10.7	9.9	10.2	42.0	34.2	39.0	35.2	32.4	33.4	1
Q-6	12-10-62	12-20-62	299	26.3	11.0	10.0	10.5	38.4	35.4	37.0	35.2	34.0	34.7	Min.
Q-7	12-19-62	1-14-63	539	26.2	10.1	9.6	9.9	38.4	33.0	36.0	35.4	33.0	34.2	1/2
Q-8	12-31-62	1-14-63	750	27.2	10.7	10.0	10.2	39.0	37.2	37.9	34.8	33.2	33.8	1/2
Current Machine Average				27.0			10.1			37.3			34.0	
Cumulative Machine Average				26.7			9.9			37.2			34.6	
Machine Factor, %				101.3			102.7			100.2			98.5	
Machine Index, %				99.5			98.8			101.8			102.8	

TABLE XX

SUMMARY OF TEST RESULTS FOR MACHINE R

December, 1962 and January, 1963
(Type of Medium: Semichemical)

R-1	11-12-62	11-28-62	2399	25.9	10.2	9.9	10.0	36.6	34.2	35.4	33.4	30.8	31.8	1-1/2
R-2	11-18-62	11-28-62	3705	26.9	10.8	10.2	10.4	39.0	36.0	37.4	34.4	32.0	33.1	1-1/2
R-3	11-19-62	12- 3-62	3933	26.5	10.1	9.8	10.0	37.8	34.8	36.4	33.6	30.6	32.3	1-1/2
R-4	11-22-62	1- 3-63	4377	26.3	10.7	10.0	10.3	37.8	35.4	36.5	34.4	33.2	33.8	1-1/2
R-5	11-23-62	1- 3-63	4659	27.0	10.4	10.1	10.3	42.0	38.4	40.6	35.6	34.2	34.7	1-1/2
R-6	12- 8-62	1- 3-63	1315	26.8	10.7	10.0	10.2	39.6	36.0	37.7	35.2	33.6	34.6	1-1/2
R-7	12-10-62	1- 3-63	1968	27.6	10.3	9.5	9.9	37.2	34.2	36.0	34.6	33.0	34.0	1-1/2
Current Machine Average				26.7			10.2			37.1			33.5	
Cumulative Machine Average				26.7			10.3			37.1			33.6	
Machine Factor, %				100.0			98.7			100.0			99.6	
Machine Index, %				98.3			99.0			101.3			101.1	

[a] Maximum speed at which this roll could be corrugated with minimum tension was 575 f.p.m.

TABLE XXI

SUMMARY OF TEST RESULTS FOR MACHINE S

December, 1962 and January, 1963
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M sq.ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
S-1	11-21-62	11-29-62	336	26.9	11.0	10.2	10.6	40.2	36.6	38.4	35.0	33.4	34.3	1-1/2
S-2	11-27-62	12- 3-62	337	26.9	12.0	9.9	10.8	39.6	34.2	37.0	35.8	34.0	34.8	1-1/2
S-3	12- 6-62	12-11-62	338	27.3	11.8	10.2	10.9	39.0	35.4	37.1	37.6	34.6	36.4	1-1/2
S-4	12-11-62	12-20-62	339	27.2	11.7	10.2	10.8	42.6	37.2	39.5	39.2	34.8	37.2	1
S-5	12-18-62	12-26-62	340	25.7	11.0	9.8	10.4	37.8	34.2	36.4	33.8	32.4	33.2	1-1/2
S-6	1- 4-63	1-10-63	341	27.5	11.0	10.1	10.6	42.6	38.4	40.7	41.2	36.8	39.0	1-1/2
S-7	1-10-63	1-22-63	342	26.3	10.7	9.9	10.1	42.6	36.0	39.5	35.4	34.4	34.9	1-1/2
S-8	1-15-63	1-22-63	343	27.0	11.0	10.0	10.5	42.0	36.6	39.5	37.4	35.0	36.6	1-1/2
Current Machine Average				26.9			10.6			38.5			35.8	
Cumulative Machine Average				26.5			10.6			38.9			35.1	
Machine Factor, %				101.2			100.0			98.9			101.9	
Machine Index, %				98.8			103.3			105.0			108.2	

TABLE XXII

SUMMARY OF TEST RESULTS FOR MACHINE T

December, 1962 and January, 1963
(Type of Medium: Kraft)

T-1	11-16-62	12- 3-62	31	27.8	10.1	9.8	9.9	37.2	35.4	36.6	36.0	33.6	34.9	1/2
T-2	11-16-62	12- 3-62	32	27.8	10.1	9.2	9.8	39.0	33.6	36.1	35.0	32.0	33.5	1/2
T-3	11-16-62	12- 3-62	33	27.9	10.3	9.2	9.8	38.4	34.2	36.4	37.0	33.8	34.8	1-1/2
T-4	11-16-62	12- 3-62	34	28.0	10.0	9.3	9.8	39.0	36.6	37.3	36.0	34.4	35.2	1
Current Machine Average				27.9			9.8			36.6			34.6	
Cumulative Machine Average				28.0			9.8			34.7			32.1	
Machine Factor, %				99.5			100.0			105.4			107.7	
Machine Index, %				102.5			95.9			100.0			104.5	

TABLE XXIII

SUMMARY OF TEST RESULTS FOR MACHINE U

December, 1962 and January, 1963
(Type of Medium: Semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M sq.ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
U-1	12- 7-62	12-18-62	--	26.8	11.2	10.2	10.6	39.0	36.0	37.4	36.2	35.6	35.9	1-1/2
U-2	12- 7-62	12-18-62	--	26.5	10.9	10.3	10.6	39.0	33.6	35.4	34.8	31.8	33.7	1-1/2
U-3	12-10-62	12-18-62	--	26.6	11.0	10.0	10.6	40.2	34.8	36.7	36.2	34.4	35.2	1-1/2
U-4	12-11-62	12-18-62	--	26.9	10.8	10.0	10.4	42.0	36.0	38.8	36.6	34.0	35.2	1-1/2
U-5	1- 6-63	1-21-63	--	26.3	10.3	10.0	10.1	38.4	33.6	36.7	33.2	31.4	32.4	1-1/2
U-6	1- 7-63	1-21-63	--	26.6	10.3	10.1	10.2	39.6	36.6	37.9	35.0	33.8	34.3	1-1/2
U-7	1- 8-63	1-21-63	--	26.5	10.8	10.0	10.2	39.0	34.2	36.6	33.6	32.0	32.9	1-1/2
U-8	1-10-63	1-21-63	--	27.2	10.7	9.8	10.2	38.4	36.0	37.1	35.2	32.0	33.5	1-1/2
Current Machine Average				26.7			10.4			37.1			34.1	
Cumulative Machine Average				26.8			10.3			36.8			33.2	
Machine Factor, %				99.4			100.7			100.8			102.8	
Machine Index, %				98.1			101.0			101.2			103.0	

TABLE XXIV

SUMMARY OF TEST RESULTS FOR MACHINE V

December, 1962 and January, 1963
(Type of Medium: Bogus)

V-1	1- 5-63	1-21-63	408	27.6	11.7	10.0	10.9	39.6	33.6	36.5	35.6	32.4	33.7	Min.
V-2	1-11-63	1-21-63	409	28.0	11.0	9.7	10.4	38.4	37.2	38.0	35.2	33.0	33.8	1-1/2
Current Machine Average				27.8			10.6			37.3			33.8	
Cumulative Machine Average				28.3			10.6			37.6			33.6	
Machine Factor, %				98.2			100.0			99.0			100.4	
Machine Index, %				102.3			103.5			101.7			101.9	

tests except basis weight for which only the average is shown; in addition the over-all average result for all sample lots submitted from a given machine is shown for each test. The latter over-all averages are reported as "current machine averages." A cumulative machine average is also shown and is calculated by averaging the current machine averages for the previous twelve periods (excluding the current period). Also shown for each machine in Tables III to XXIV are the machine factor and machine index which are defined as follows:

$$\frac{\text{current machine average}}{\text{cumulative machine average}} \times 100 = \text{machine factor (\%)}$$

$$\frac{\text{current machine average}}{\text{cumulative F.K.I. average}} \times 100 = \text{machine index (\%)}$$

The machine factor and machine index provide a means for comparing the current machine average with either the previous results for that particular machine or with the cumulative results for all machines—i.e., the cumulative F.K.I. average.

DISCUSSION OF RESULTS

Shown below from Table II are the maximum and minimum current machine averages noted for each test during the current period (December, 1962 and January, 1963); the current machine average is the average of the results obtained on all rolls submitted from a given machine during the current period. Also given for each test is the current F.K.I. average which is determined by averaging the current machine averages for the current period and is indicative of the test level being maintained by the industry as a whole to the extent that the industry is represented by the participating machines:

	Maximum Current Machine Average	Minimum Current Machine Average	Current F.K.I. Average
Basis wt., lb.	28.0	26.2	27.0
Caliper, pt.	11.0	9.2	10.2
Concora flat crush, p.s.i.	40.1	29.7	36.9
Single-face flat crush, p.s.i.	36.0	28.2	33.4

The runnability data for the 140 rolls evaluated during the current period are summarized as follows:

Runnability	Number of Rolls	Percentage of Total Rolls
Less than 600 f.p.m. with minimum tension	2	1.4
600 f.p.m.—minimum tension	6	4.3
600 f.p.m.—1/2 lb. per in. tension	15	10.7
600 f.p.m.—1 lb. per in. tension	19	13.6
600 f.p.m.—1-1/2 lb. per in. tension	98	70.0

In Table XXV a comparison of Institute and mill Concora flat crush test results obtained on conditioned specimens is given for each machine for the current period. The inclusion of these comparisons is made possible by the fact that interested participants submit their Concora flat crush test results to The Institute of Paper Chemistry. This affords each participant the opportunity to review the level of agreement for his data with the levels shown for the other participants. Data sheets for supplying this information may be obtained from the Institute. Comparisons of this kind are a helpful adjunct to other calibration procedures. Shown in Table XXV are (1) the Institute and mill Concora averages for each roll included in these comparisons, (2) the difference between the roll average based on Institute data and that based on mill data, (3) the Institute and mill averages based on all rolls included in the comparison, and (4) the difference between these over-all averages.

The Concora flat crush data shown in Table XXV are summarized in Part I of Table XXVI where for each machine the following information is given: (1) Current machine average based on Institute data, (2) current machine average based on mill data, (3) the average difference—that is, the difference between the current machine average based on Institute data and that based on mill data, and (4) the maximum difference encountered in comparing Institute and mill test averages for individual rolls. In Part II of Table XXVI the average differences given in Part I have been converted to per cent. Comparative data from the previous two reports are also included in Part II of Table XXVI. It may be seen in Part II of Table XXVI that, for the current period, the highest average difference of 12.8% was associated with Machine H and the lowest of 0.0% with Machines F and J.

In Table XXVII a summary of the agreement between Institute and mill Concora flat crush data is given for the current period, and comparative data

TABLE XXV

INSTITUTE AND MILL CONCORA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR DECEMBER, 1962 AND JANUARY, 1963

Machine A						Machine C						Machine D					
			Concora Flat Crush, p.s.i.						Concora Flat Crush, p.s.i.						Concora Flat Crush, p.s.i.		
Code	Mill Roll No.	Date Made	Institute	Mill	Difference[a]	Code	Mill Roll No.	Date Made	Institute	Mill	Difference[a]	Code	Mill Roll No.	Date Made	Institute	Mill	Difference[a]
A-1	152	11-12-62	35.2	37.0	+1.8	C-1	44	11-28-62	34.4	35.9	+1.5	D-1	515	11- 8-62	36.2	37.8	+1.6
A-2	153	11-12-62	35.8	38.0	+2.2	C-2	45	12- 1-62	33.6	36.8	+3.2	D-2	516	11-12-62	39.8	38.9	-0.9
						C-3	46	12- 9-62	34.3	38.9	+4.6	D-3	517	11-27-62	40.4	42.8	+2.4
						C-4	47	12-16-62	33.1	34.2	+1.1	D-4	518	12- 6-62	42.2	40.4	-1.8
						C-5	48	12-20-62	34.8	37.9	+3.1	D-5	519	12-13-62	38.4	41.2	+2.8
						C-6	49	1- 9-63	33.1	32.9	-0.2						
						C-7	50	1-12-63	34.3	33.5	-0.8						
Current Machine Av.			35.5	37.5	+2.0	Current Machine Av.			34.0	35.7	+1.7	Current Machine Av.			39.4	40.2	+0.8
Machine E						Machine F						Machine G					
E-1	16	11-20-62	31.3	31.3	0.0	F-1	829	11-17-62	38.6	34.4	-4.2	G-1	--	12- 6-62	36.7	36.7	0.0
E-2	17	11-26-62	29.0	29.2	+0.2	F-2	830	11-17-62	35.3	35.0	-0.3	G-2	--	12- 7-62	36.6	36.8	+0.2
E-3	18	12- 6-62	31.6	29.6	-2.0	F-3	837	11-29-62	41.6	40.2	-1.4	G-3	--	12-11-62	35.0	35.2	+0.2
E-4	19	12-12-62	35.5	35.0	-0.5	F-4	838	11-29-62	41.5	37.9	-3.6	G-4	--	12-12-62	38.5	35.4	-3.1
E-5	1	1- 2-63	35.8	34.3	-1.5	F-5	845	12-14-62	31.1	35.1	+4.0	G-5	--	1- 6-63	40.6	41.0	+0.4
E-6	2	1-15-63	33.0	33.7	+0.7	F-6	846	12-14-62	33.0	34.1	+1.1	G-6	--	1- 8-63	39.7	39.8	+0.1
						F-7	853	12-27-62	35.2	39.0	+3.8	G-7	--	1-10-63	40.0	40.3	+0.3
						F-8	854	12-27-62	35.0	39.0	+4.0	G-8	--	1-11-63	42.7	41.8	-0.9
						F-9	861	1-11-63	40.6	38.9	-1.7						
						F-10	862	1-11-63	40.7	39.8	-0.9						
Current Machine Av.			32.7	32.2	-0.5	Current Machine Av.			37.3	37.3	0.0	Current Machine Av.			38.7	38.4	-0.3
Machine H						Machine I						Machine J					
H-1	L-7	12-26-62	31.2	34.0	+2.8	I-1	44	11-28-62	37.7	35.5	-2.2	J-1	--	12- 6-62	37.2	36.0	-1.2
H-2	L-8	12-26-62	30.8	33.5	+2.7	I-3	46	12- 9-62	35.6	41.4	+5.8	J-2	--	12- 7-62	34.3	36.4	+2.1
H-3	L-16	12-26-62	29.6	31.1	+1.5	I-4	47	12-16-62	34.2	40.1	+5.9	J-3	--	12-10-62	37.8	35.2	-2.6
H-4	L-18	12-26-62	29.4	33.7	+4.3	I-5	48	12-20-62	36.6	40.0	+3.4	J-4	--	12-11-62	34.4	35.0	+0.6
H-5	A-1	1- 4-63	29.3	33.6	+4.3	I-6	49	1- 9-63	31.9	32.3	+0.4	J-5	--	1- 6-63	37.8	39.1	+1.3
H-6	A-2	1- 4-63	29.5	33.4	+3.9	I-7	50	1-12-63	35.3	34.6	-0.7	J-6	--	1- 7-63	38.3	37.8	-0.5
H-7	A-3	1- 4-63	29.5	34.1	+4.6							J-7	--	1- 8-63	34.9	36.8	+1.9
H-8	A-4	1- 4-63	28.6	34.8	+6.2							J-8	--	1-10-63	38.8	37.4	-1.4
Current Machine Av.			29.7	33.5	+3.8	Current Machine Av.			35.2	37.3	+2.1	Current Machine Av.			36.7	36.7	0.0

[a] This difference is the amount in p.s.i. units by which the mill result is higher or lower than the Institute result.

TABLE XXV (Continued)

INSTITUTE AND MILL CONCORA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR DECEMBER, 1962 AND JANUARY, 1963

Machine K

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
K-1	834	11-20-62	36.1	34.6	-1.5
K-2	835	11-20-62	35.8	34.8	-1.0
K-3	842	12- 8-62	39.8	39.0	-0.8
K-4	843	12- 8-62	39.7	39.6	-0.1
K-5	850	1- 4-63	35.2	35.8	+0.6
K-6	851	1- 4-63	35.5	37.0	+1.5
K-7	859	1- 4-63	35.5	38.8	+3.3
K-8	860	1- 4-63	35.2	37.9	+2.7
Current Machine Av.			36.6	37.2	+0.6

Machine L

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
L-2	681	11-27-62	41.9	39.0	-2.9
L-3	682	12-20-62	41.3	38.6	-2.7
L-4	683	1-10-63	40.8	41.5	+0.7
Current Machine Av.			41.3	39.7	-1.6

Machine N

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
N-1	519	11-15-62	35.4	36.3	+0.9
N-2	520	11-19-62	38.6	41.4	+2.8
N-3	521	12- 5-62	35.5	36.6	+1.1
N-4	522	12-11-62	38.0	37.0	-1.0
N-5	523	12-13-62	35.2	35.5	+0.3
N-6	524	12-18-62	35.8	37.8	+2.0
N-7	525	12-20-62	37.3	37.2	-0.1
N-8	526	12-20-62	38.0	37.2	-0.8
N-9	527	12-22-62	39.4	40.5	+1.1
N-10	528	1-15-63	38.8	38.5	-0.3
Current Machine Av.			37.2	37.8	+0.6

Machine O

O-1	223	12- 3-62	36.5	35.2	-1.3
O-2	224	12-10-62	37.6	37.2	-0.4
Current Machine Av.			37.0	36.2	-0.8

Machine P

P-1	386	11-19-62	38.6	37.9	-0.7
P-2	387	11-27-62	37.8	38.3	+0.5
P-3	388	12- 3-62	39.5	42.2	+2.7
P-4	389	12-11-62	40.2	40.4	+0.2
P-5	390	12-17-62	39.8	39.8	0.0
P-6	391	1- 4-63	39.7	41.9	+2.2
Current Machine Av.			39.3	40.1	+0.8

Machine Q

Q-1	352	11-12-62	38,0	36.4	-1.6
Q-6	299	12-10-62	37.0	37.7	+0.7
Current Machine Av.			37.5	37.0	-0.5

Machine R

R-1	2399	11-12-62	35.4	34.6	-0.8
R-2	3705	11-18-62	37.4	35.6	-1.8
R-3	3933	11-19-62	36.4	35.4	-1.0
R-4	4377	11-22-62	36.5	35.3	-1.2
R-5	4659	11-23-62	40.6	36.2	-4.4
R-6	1315	12- 8-62	37.7	34.0	-3.7
R-7	1968	12-10-62	36.0	34.5	-1.5
Current Machine Av.			37.1	35.1	-2.0

Machine S

S-1	336	11-21-62	38.4	37.3	-1.1
S-2	337	11-27-62	37.0	38.3	+1.3
S-3	338	12- 6-62	37.1	37.3	+0.2
S-4	339	12-11-62	39.5	39.8	+0.3
S-5	340	12-18-62	36.4	37.0	+0.6
S-6	341	1- 4-63	40.7	42.1	+1.4
S-7	342	1-10-63	39.5	37.6	-1.9
S-8	343	1-15-63	39.5	37.1	-2.4
Current Machine Av.			38.5	38.3	-0.2

Machine T

T-1	31	11-16-62	36.6	39.6	+3.0
T-2	32	11-16-62	36.1	38.6	+2.5
T-3	33	11-16-62	36.4	39.7	+3.3
T-4	34	11-16-62	37.3	39.5	+2.2
Current Machine Av.			36.6	39.4	+2.8

Machine U

U-1	--	12- 7-62	37.4	37.8	+0.4
U-2	--	12- 7-62	35.4	36.6	+1.2
U-3	--	12-10-62	36.7	37.2	+0.5
U-4	--	12-11-62	38.8	36.2	-2.6
U-5	--	1- 6-63	36.7	37.3	+0.6
U-6	--	1- 7-63	37.9	40.3	+2.4
U-7	--	1- 8-63	36.6	37.2	+0.6
U-8	--	1-10-63	37.1	37.4	+0.3
Current Machine Av.			37.1	37.5	+0.4

[a]This difference is the amount in p.s.i. units by which the mill result is higher or lower than the Institute result.

TABLE XXVI

PART I: A COMPARATIVE STUDY FOR EACH MACHINE OF THE CONCORA FLAT CRUSH AVERAGES BASED ON INSTITUTE DATA AND THOSE BASED ON MILL DATA

Machine Code	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Number of Rolls Compared	2	0	7	5	6	10	8	8	6	8	8	3	0	10	2	6	2	7	8	4	8	0
Concora Flat Crush, p.s.i.																						
Current Machine Av. (Institute)[a]	35.5	--	34.0	39.4	32.7	37.3	38.7	29.7	35.2	36.7	36.6	41.3	--	37.2	37.0	39.3	37.5	37.1	38.5	36.6	37.1	--
Current Machine Av. (Mill)[a]	37.5	--	35.7	40.2	32.2	37.3	38.4	33.5	37.3	36.7	37.2	39.7	--	37.8	36.2	40.1	37.0	35.1	38.3	39.4	37.5	--
Average Difference[b]	+2.0	--	+1.7	+0.8	-0.5	0.0	-0.3	+3.8	+2.1	0.0	+0.6	-1.6	--	+0.6	-0.8	+0.8	-0.5	-2.0	-0.2	+2.8	+0.4	--
Maximum Difference[c]	+2.2	--	+4.6	+2.8	-2.0	-4.2	-3.1	+6.2	+5.9	-2.6	+3.3	-2.9	--	+2.8	-1.3	+2.7	-1.6	-4.4	-2.4	+3.3	-2.6	--

PART II: A TABULATION FOR EACH MACHINE OF THE AVERAGE DIFFERENCE (PER CENT) BETWEEN THE CONCORA FLAT CRUSH BASED ON INSTITUTE DATA AND THAT BASED ON MILL DATA

Average Difference, %[d]																						
Current Report (Dec. and Jan.)	+5.6	--	+5.0	+2.0	-1.5	0.0	-0.8	+12.8	+6.0	0.0	+1.6	-3.9	--	+1.6	-2.2	+2.0	-1.3	-5.4	-0.5	+7.7	+1.1	--
98th Report (Oct. and Nov.)	+8.7	--	+2.4	+2.3	+3.9	-3.2	-0.3	+0.9	+4.2	-0.8	+1.4	+2.7	+12.4	+4.9	+7.2	-5.0	+1.6	-3.3	-1.5	+1.8	+1.9	--
97th Report (Aug. and Sept.)	-3.9	--	+1.8	+7.5	--	+2.6	-2.8	--	+0.8	-1.6	-1.1	-1.7	-12.2	+3.4	+3.0	-11.6	+3.4	-7.6	-2.5	+5.5	+1.7	--

[a] Comparisons based on current machine average include only those rolls for which mill data were submitted.
[b] Average difference is the difference between the current machine average based on Institute test results and that based on mill test results with the Institute test results used as the reference. See Table XXV.
[c] Maximum difference is the greatest difference encountered in comparing Institute and mill test averages for individual rolls. See Table XXV.
[d] Average difference (per cent) is computed by dividing the average difference in p.s.i. (shown above in Part I of this table) by the Institute current machine average and multiplying the result by 100.

from the previous bimonthly period are also included. The data shown for the current period indicate that agreement between Institute and mill Concora data was good. It may be seen in Table XXVII that, for the current period, 21.1% of the comparisons of Institute and mill data differed by 1% or less, 63.2% of the comparisons differed by 2.5% or less, and 73.7% of the comparisons differed by 5% or less; it may be further noted that agreement at the 1 and 2.5% levels was somewhat better than the agreement for the previous period at these levels. The maximum difference of 12.8% noted for the current period was only slightly higher than the maximum difference of 12.4% noted for the previous period.

TABLE XXVII

SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL
CONCORA FLAT CRUSH DATA

Average Percentage Difference Between Institute and Mill Concora Flat Crush Test Results[a]	Percentage of All Machines Included Within the Indicated Range	
	Previous Period[b]	Current Period[c]
± 1.0	14.3	21.1
± 2.5	47.6	63.2
± 5.0	81.0	73.7
±10.0	95.2	94.7
±12.8	100.0[d]	100.0

[a]The average obtained at the Institute was used as the reference in the calculation of the percentage differences.
[b]October and November, 1962.
[c]December, 1962 and January, 1963.
[d]Maximum percentage difference was 12.4.

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